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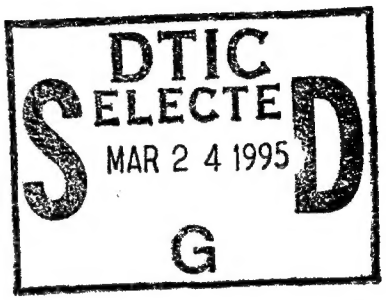
ATTENUATION RESULTS OF A REAL-EAR ATTENUATION AT THRESHOLD PROTOCOL INTENDED TO PROVIDE AN ESTIMATE OF THE FIELD ATTENUATION OF HEARING PROTECTION DEVICES



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TECHNICAL REVIEW AND APPROVAL

AL/CF-TR-1994-0133

The voluntary informed consent of the subjects used in this research was obtained as required by Air Force Regulation 169-3.

This report has been reviewed by the Office of Public Affairs (PA) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

FOR THE COMMANDER

THOMAS J. MOORE, Chief
Biodynamics and Biocommunications Division
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13. ABSTRACT *(Maximum 200 words)*

This report describes a Real-Ear Attenuation at Threshold (REAT) experiment conducted by Armstrong Laboratory (AL) and provides the attenuation data collected. The experiment follows a new measurement protocol developed by an American National Standards Institute (ANSI) working group, S12.11, titled "Procedure for an Interlaboratory Comparison of REAT Protocols Intended to Provide an Improved Estimate of the Field Attenuation of Hearing Protection Devices." AL was one of four laboratories that participated in the experimental plan outlined by the protocol to serve as an interlaboratory comparison. The results of the experiment were compared to the available real-world data base to demonstrate the utility of the protocol and to serve as the basis for the development of a standard to measure the real-ear attenuation of hearing protection devices (HPDs) which are manufactured for distribution and sale in general commerce and to the military.

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SUMMARY

The United States Air Force pioneered comprehensive hearing conservation programs for all noise environments with the first formal specifications published in Air Force Regulation 160-3, Hazardous Noise Exposure, in 1956. Today, hearing conservation programs are required by federal law in all occupational environments that contain noise exposures exceeding established criteria and standards which define safe noise exposures. The primary goal of industrial hearing conservation programs is to prevent occupational noise induced hearing loss. The ideal solution would be quiet work environments. Unfortunately, occupational noise exposures that can produce hearing loss are widespread throughout all kinds of work places. The practical solution implemented to counteract the effects of noise on hearing is the use of hearing protection devices, earplugs and earmuffs, designed to reduce the amount of noise entering the ear to within safe limits.

Today, hearing protection devices are the core of virtually all hearing conservation programs. The amount of hearing protection provided by these devices is determined by laboratory measurement procedures that have been adopted as national and international standard methods. Federal regulations require that individual hearing protection devices be labelled with performance values, called Noise Reduction Ratings (NRR), based on measured data to indicate their relative effectiveness when worn in noise. Hearing protection devices labelled with high values are presumed to be better than those labelled with lower values. The labelled values are used by consumers and directors of hearing conservation programs to select hearing protection devices for their own use or use by employees in particular environments where the levels of the noises are usually known.

Recent studies of hearing protection device performance conducted in the work place revealed that the labelled attenuation values indicate significantly greater attenuation than is measured in the work place, particularly for most insert earplugs. One of the implications of this overestimation of the attenuation is that the worker is likely experiencing greater noise exposure than estimated and higher risk of hearing loss.

The fundamental problem in the failure of hearing conservation programs to effectively utilize the hearing protection devices is the failure to provide adequate instructions, training, selection, and fitting of hearing protection devices and to monitor the worker after she/he has received the device. Consequently, workers do not understand the importance of hearing protection devices or how they are to be cared for and used for maximum benefit. Hearing conservation programs are unlikely to improve the present situation by providing the essential services. An effort has been initiated

to attack the problem with a different approach that focuses on the labelled values that represent the performance of the devices. Theoretically, if the labelled values were close to the values actually obtained by workers in occupational situations, the estimates of protection and hearing risk would be more accurate and protective, presumably resulting in reduced risk to hearing.

This approach proposes that the standard laboratory measurement methodology be used to evaluate hearing protection device performance; however, the instructions and fitting procedures for the laboratory test subjects would be changed to represent the manner in which hearing protection is dispensed in many occupational situations. This "work place instruction and fitting," where adequate instructions, training, fitting, and the like are not present, is expected to produce hearing protection device performance values much closer to the target values of those actually measured on numerous employees in the work place.

This approach was evaluated in an interlaboratory study to determine the reliability of the measurement procedure within single laboratories and across different laboratories. The measurement procedure must provide performance values similar to those measured in the work place. It must also provide similar values when used by different laboratories to measure the same hearing protection devices.

Armstrong Laboratory, Wright-Patterson Air Force Base, participated in the interlaboratory study because of the potential impact of this approach on the Air Force hearing conservation program as well as on national regulations concerning the use of hearing protection devices. The data collected with this new attenuation measurement procedure are not yet in the literature. It has widespread interest to both the national and international standards organizations as well as some government agencies. The raw data collected during the Armstrong Laboratory execution of the interlaboratory study are made available in this publication.

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INTRODUCTION

The real-ear attenuation at threshold (REAT) method used to assess the sound attenuation provided by hearing protection devices (HPDs) is specified in American National Standards Institute (ANSI) Standard (S) 12.6-1984. This standard uses an experimenter-supervised fit under well controlled laboratory conditions to provide the optimum attenuation a device offers the wearer.

A new measurement protocol was developed by an ANSI working group, S12.11, titled "Procedure for an Interlaboratory Comparison of REAT Protocols Intended to Provide an Improved Estimate of the Field Attenuation of Hearing Protection Devices," to demonstrate the utility of the protocol. The results of the experiment were compared to the available real-world data base. These results will serve as the basis for the development of a standard to measure the real-ear attenuation of HPDs which are manufactured for distribution and sale in general commerce and to the military.

Four laboratories (Cabot Corporation [EARCAL], United States Army Aerospace Research Laboratory [USAARL], National Institute of Occupational Safety and Health [NIOSH], and Armstrong Laboratory [AL]) participated in the experimental plan outlined by the ANSI S12.11 protocol to serve as an interlaboratory comparison. Each laboratory tested the same brands of HPDs, but not the same samples. The samples for each HPD all came from the same manufacturer's batch. The data provided in this report are those obtained by AL in the Sound Attenuation Measurement System (SAMS) located at Wright-Patterson Air Force Base, Ohio. The SAMS sound chamber meets ANSI S12.6-1984 specifications for real-ear attenuation testing. For more details on SAMS refer to Real-Ear Attenuation Testing System (RATS), AL-TR-1991-0073 [1]. The experimental data were collected by Capt Denise West and Capt Nancy (Allen) Green of the Bioacoustics and Biocommunications Branch, Biodynamics and Biocommunications Division, Crew Systems Directorate, Armstrong Laboratory (AL/CFBA).

PROCEDURE

Some modifications and additions were made to SAMS in accordance with the test procedures outlined in the protocol. The test sounds used were 125, 250, 500, 1000, 2000, 4000, and 8000 Hz; the 3150 and 6300 Hz test sounds were not measured. A fitting noise was generated with a noise generator and shaped with a graphic equalizer so that the 100 to 8000 Hz 1/3 octave bands (OBs) fell within a range of 20 dB with a response in each of the 1/3 OBs from 100 - 250 Hz exceeding the value of the 1000 Hz 1/3 OB by at least 15 dB.

Novice subjects having little or no familiarity with the use of hearing protectors were selected to participate in the study. To qualify, they must have never participated in an experiment designed to measure hearing protector attenuation, never received personal instruction in the use of hearing protectors, never worn hearing protectors because they were exposed to noise as part of their occupation, and not worn hearing protectors more than twice in the past month nor more than five times in the past year. Subjects who passed this novice test received an initial qualification earphone audiogram to ensure that all hearing threshold levels were no greater than 25 dB hearing level (HL). They were then trained with a minimum of five open-ear sound-field audiograms in one session, the last three of which did not vary by more than 6 dB.

The HPDs tested were one foam, formable earplug (EAR Plug); two premolded multi-sized earplugs (Mediprint Quiet Zone V-51R and EP100 earplugs); and one circumaural earmuff worn over the head (Bilsom UF-1). The V-51Rs come in extra small (XS), small (S), medium (M), large (L), and extra large (XL) sizes. The EP100s come in small (S) and regular (R) sizes.

The order of presentation for testing of the HPDs is presented in Table 1 and was designed to counterbalance across subjects and allow an estimate of the practice effect, or how the subjects learn to better use HPDs on subsequent trials as a result of fitting practice during the preceding HPDs trials. A total of 29 subjects were evaluated to obtain 24 subjects who conformed to the test requirements. Each subject visited the laboratory 8 times with each visit consisting of 2 measurement sessions in which 2 HPDs were tested. Subjects exited and reentered the test chamber between sessions. Visits to the laboratory were separated by a minimum of 6 hours and all 8 visits were completed within a period of 21 days. Subjects were not allowed to wear eyeglasses, ear jewelry, or other devices that might affect the ability of the HPD to make an acoustical seal around the ear during testing.

The fitting techniques consisted of subject fit (SF) and informed user fit (IUF). SF1 is the condition for visits 1 and 2, SF2 is the condition for visits 3 and 4, IUF1 is the condition for visits 5 and 6, and IUF2 is the condition for visits 7 and 8. In the detailed procedures for the SF and IUF described below, the instructions enclosed in quotations were recited to the subjects verbatim from index cards as the subjects read the written instructions from separate index cards.

For the SF test, the subject was handed the HPD in the packaging in which it is sold, along with the manufacturer's written fitting instructions that would normally accompany the device. The subject was instructed, "The purpose of this test is to estimate the noise reduction that you would be likely to

obtain while wearing this hearing protector in a noisy environment. Please read the instructions and fit and adjust the hearing protector to the best of your ability. I am not allowed to assist you in that process." The subject was then advised of the existence and location(s) of all available manufacturer's fitting instructions, on and/or inside the individual product packaging or master dispenser. The subject then fitted and adjusted the hearing protector without any verbal or physical assistance from the experimenter and no fitting noise was provided.

For HPDs supplied in multiple sizes, one pair of each size was placed on a table in front of the subject at the time that she/he was given the manufacturer's written fitting instructions. Once the subject read the instructions, the experimenter continued by saying, "Please try these protectors on to find the size that is best for you. This may be different for each of your ears. Begin by trying a middle or regular size and then, based on the looseness or tightness of the fit and any guidance provided in the manufacturer's instructions, proceed to larger or smaller sizes as needed." No recommendations, physical assistance, fitting noise, nor sound attenuation measurements were provided in the size-selection process. The total fitting process, from the time the subject began to read the instructions until s/he stopped fitting the protector and prepared for testing, did not exceed 5 minutes.

Once the subject indicated that the fitting had been completed or 5 minutes expired, s/he removed the hearing protector and remained inside the test chamber for a 2 minute accommodation period. Following the 2 minute accommodation period, either the open threshold measurements began or, in the case of the occluded threshold, the experimenter reentered the test room to provide instructions for the occluded test. The subject was instructed, "After I leave the chamber, please put on the hearing protector in the way you have just learned. Refer to the manufacturer's instructions as needed. Once you indicate that you have completed fitting the protector, the test will begin, and you may not touch or adjust the protector until you are asked to remove it at the end of the test. In the case of earplugs, if the device falls out of your ear during the test, please signal me. Throughout the test I will be able to observe you using the TV camera." After reading the preceding statement, the experimenter left the chamber and was not present during the final fitting process.

For the IUF the experimenter instructed the subject on how to fit the HPD in accordance with the manufacturer's written instructions that normally accompany the device without augmenting inadequate or correcting inaccurate instructions. The experimenter began by telling the subject, "The purpose of this test is to estimate the noise reduction that you would be likely

to obtain while wearing this hearing protector in a noisy environment," and continued with a demonstration of the fitting of the HPD on him/herself. Once properly fitted, the experimenter said "please carefully note the position of the earplugs in my ears" or in the case of circumaural devices, "please carefully note the position of the earmuffs around my ears and on my head," and turn her ears/head to assist the subject's observations. The experimenter did not touch, or physically help the subject in fitting the HPD, but closely viewed the fitting process and provided verbal assistance, limiting comments to those consistent with the manufacturer's instructions.

When HPDs were supplied in multiple sizes, the experimenter assisted the subject in selecting the proper size. A fitting noise was presented to the subject to assist in selecting the proper size. The subject adjusted the fit of the HPD to obtain minimum loudness of the noise. Sound attenuation measurements were not used as an aid or criterion in the size selection process. The total fitting process from commencement of instructions until the subject was ready for testing did not exceed 8 minutes. Once the experimenter concluded that the subject could fit the device according to the manufacturer's instruction or 8 minutes expired, the subject removed the HPD and remained seated in the test chamber for a 2 minute accommodation period.

After the accommodation period, either the open threshold measurement began or, in the case of an initial occluded threshold, the experimenter instructed the subject, "After I leave the chamber and have turned on the fitting noise, please put on the hearing protector in the way you have just learned. Refer to the manufacturer's instructions as needed. Adjust the hearing protector, while listening to the noise, so that it blocks the most sound from your ears, but is still reasonably comfortable. By 'blocking the most sound' I mean that the noise you hear under the protector should be reduced to a minimum. And by 'reasonably comfortable' I mean that you should consider your ability to wear the hearing protector for normal use while engaged in noisy occupational or recreational activities. Once you indicate that you have completed fitting the protector, the noise will be turned off, the test will begin, and you may not touch or adjust the hearing protector until you are asked to remove it at the end of the test. In the case of earplugs, if the device falls out of your ear during the test, please signal me. Throughout the test I will be able to observe you using the TV camera." After reading the preceding statement to the subject, the experimenter left the chamber and turned on the fitting noise. The experimenter was not present during the final fitting process nor was any assistance or additional explanation provided.

When the EAR foam earplug was tested, the measurement of the occluded thresholds did not begin until at least two minutes after the hearing protectors were fitted to allow time for the foam to expand or conform to fit the ear canal. The subject remained in the chamber for the complete set of two open and two occluded thresholds which comprised one session. The subject was reminded that s/he could review the written instructions prior to refitting the hearing protector for the second set of measurements, but verbal or physical assistance was not given by the experimenter. The subject exited the chamber after the first HPD was tested and reentered the chamber to begin the same SF or IUF process as described above for the second HPD.

After the subject completed all 8 visits, his/her head and ears were measured for earcanal size, bitragus breadth, head height, ear protrusion, ear breadth, and ear length. The earcanal size was measured using the American Optical EARGAGE Ear Insert Fitting Device with diameters of 7.7, 8.4, 9.1, 10.4, and 11.4 mm for sizes of extra small (XS), small (S), medium (M), large (L), and extra large (XL), respectively. The bitragus breadth is measured from the anterior base of the right tragus to the anterior base of the left tragus with a set of calipers. The head height is the distance from the anterior base of the tragus to the level of the top of the head. The ear protrusion is the horizontal distance from the bony eminence directly behind the ear to the most lateral protrusion of the ear. The ear breadth is measured perpendicular to its long axis. The ear length is the maximum length of the ear as measured along the long axis. Refer to Figure 1 for illustrations of the head and ear measurements.

Table 2 shows the information on age, sex, race, and qualifying audiograms of the 29 subjects selected for the experiment. Subject numbers 2 and 3 were disqualified from the study because they both had hearing levels of greater than 25 dB HL. Each of the subjects in Table 2 who passed the qualifying audiogram were trained with five practice open-ear sound-field audiograms in the SAMS facility. The thresholds of the 27 subjects who were trained are presented in Table 3. Note that the values do not represent sound pressure levels (SPL) of the subjects' thresholds of hearing, but represent the attenuator settings of the SAMS system. Each unit of change represents 1 dB change in SPL so attenuation data will represent dB attenuation. After 2 practice runs, subject number 18 was not able to track the test signal consistently enough to obtain a threshold reading in accordance with ANSI S12.6, so she was disqualified from the experiment.

Table 4 shows the earplug sizes that were selected for the V-51R and the EP100 by the 26 subjects tested for each session. Each subject's open and occluded thresholds are shown in Table 5 for all 8 visits. Subject number 6 was disqualified from the

experiment after visit 5, session A, repetition 2. The occluded condition was tested first and had an erroneously high threshold level which could not be retested without first completing the unoccluded condition, which was not permitted in the protocol. Since then, software changes have been made to the SAMS system to allow for retesting of certain thresholds upon completion of an occluded or unoccluded condition before proceeding to the next condition to prevent such situations from recurring. Subject number 23 was disqualified from the experiment due to a power outage that occurred at the beginning of visit 7, session B. The power was off for over two hours and the subject could not continue testing, thereby disqualifying him from the test. Data were collected for the remainder of visits of subjects 6 and 23, but were not included in the final calculations.

Table 6 shows each of the 26 subject's head and ear measurements as described previously. Table 7 shows the mean and standard deviations of the attenuation provided by each of the 4 HPDs for the 24 subjects who successfully completed the experiment. Table 8 shows the Noise Reduction Rating (NRR) values provided by each of the 4 HPDs for the 24 subjects who successfully completed the experiment.

CONCLUSION

The AL data contained in this report were submitted to WG S12.11 and integrated with the data from the other three laboratories. Initial analyses of the total database reveal that the AL data are consistent with that from the other laboratories and the overall values are close to values actually obtained by workers in occupational situations. It is expected that final analyses will support this observation and the total data set will be used as the basis for the development of a proposed new standard measurement procedure that will, in the long term, provide hearing protector labelling values that are representative of their actual performance in the work place.

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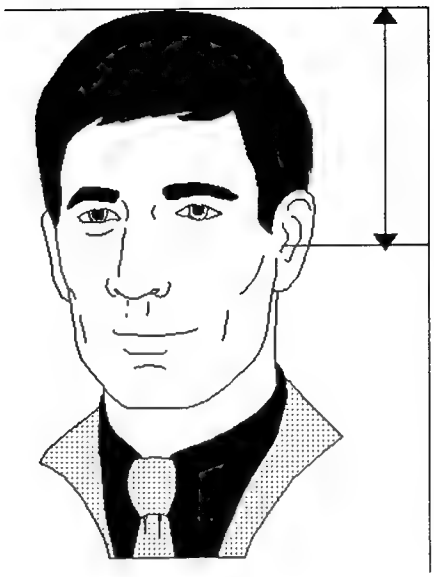
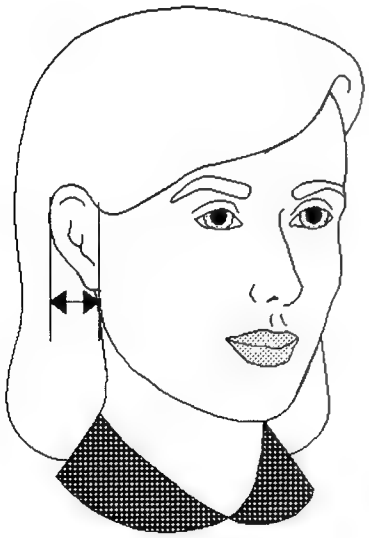
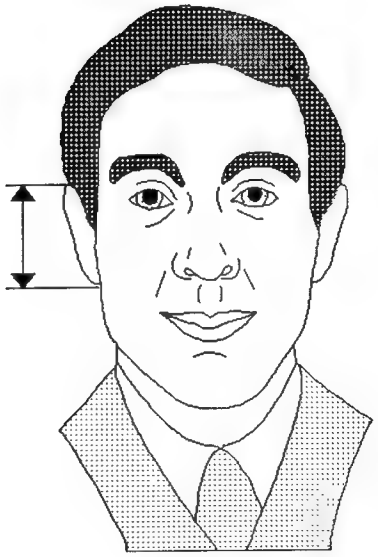


Head Height



Ear Breadth



Ear Length

Figure 1. Head and Ear Measurements

Table 1. Order of Presentation

Subject number	Visit 1,3,5,7 Session A	Visit 1,3,5,7 Session B	Visit 2,4,6,8 Session A	Visit 2,4,6,8 Session B	Abbreviations and notes
1	OEOE	OVOV	POPO	BOBO	E - EAR Plug V - V-51R P - EP100 B - Bilsom UF-1 O - open-ear trial SF - subject fit IUF - informed user fit Visit 1-2 = SF1 Visit 3-4 = SF2 Visit 5-6 = IUF1 Visit 7-8 = IUF2 Visit 1,2 = novice Visit 7,8 = experienced
2	EOEO	VOVO	OBOB	OPOP	
3	OVOV	OEOE	POPO	BOBO	
4	VOVO	EOEO	OBOB	OPOP	
5	OPOP	OBOB	EOEO	VOVO	
6	POPO	BOBO	OVOV	OEOE	
7	OBOB	OPOP	EOEO	VOVO	
8	BOBO	POPO	OVOV	OEOE	
9	OEOE	OPOP	VOVO	BOBO	
10	EOEO	POPO	OBOB	OVOV	
11	OPOP	OEOE	VOVO	BOBO	
12	POPO	EOEO	OBOB	OVOV	
13	OVOV	OBOB	POPO	EOEO	
14	VOVO	BOBO	OEOE	OPOP	
15	OBOB	OVOV	POPO	EOEO	
16	BOBO	VOVO	OEOE	OPOP	
17	OVOV	OPOP	EOEO	BOBO	
18	VOVO	POPO	OBOB	OEOE	
19	OPOP	OVOV	EOEO	BOBO	
20	POPO	VOVO	OBOB	OEOE	
21	EOEO	BOBO	OVOV	OPOP	
22	OEOE	OBOB	POPO	VOVO	
23	BOBO	EOEO	OVOV	OPOP	
24	OBOB	OEOE	POPO	VOVO	

Table 2. Subject Information and Qualifying Audiogram in dB HL

Subject number	Age	Sex	Race	Ear	Frequency (Hz)					
					250	500	1k	2k	4k	8k
1	19	F	White	Left	5	5	5	-5	5	10
				Right	0	0	0	-5	-5	5
2	48	M	White	Left	15	5	10	10	20	25
				Right	0	0	10	5	30	25
3	41	M	White	Left	15	10	25	15	25	40
				Right	5	0	15	0	15	30
4	29	F	White	Left	10	10	10	15	10	5
				Right	5	5	5	10	5	10
5	23	F	White	Left	10	5	0	-5	0	15
				Right	5	0	5	0	25	10
6	28	M	White	Left	5	5	0	-5	0	10
				Right	-5	-5	10	5	5	10
7	23	M	White	Left	5	5	10	15	0	25
				Right	-5	0	0	0	-5	5
8	43	F	White	Left	15	0	5	10	5	10
				Right	15	20	15	10	10	15
9	23	M	White	Left	10	5	10	5	0	5
				Right	5	0	5	5	-5	10
10	23	M	White	Left	10	5	10	0	10	0
				Right	-5	-5	5	0	0	5
11	20	M	White	Left	5	5	5	5	0	5
				Right	-5	0	10	5	0	5
12	19	F	White	Left	10	0	5	10	5	10
				Right	10	5	10	10	10	10
13	24	F	White	Left	15	10	15	25	10	25
				Right	15	10	5	5	0	5
14	23	F	White	Left	10	10	5	0	0	0
				Right	15	5	5	5	-5	-5

Table 2 (continued)

Subject number	Age	Sex	Race	Ear	Frequency (Hz)					
					250	500	1k	2k	4k	8k
15	21	M	White	Left	15	0	10	0	10	5
				Right	10	0	5	0	-5	-10
16	19	M	White	Left	10	5	5	-5	0	10
				Right	5	5	5	-5	0	0
17	22	F	White	Left	5	5	5	5	0	5
				Right	5	5	5	5	10	10
18	20	F	Black	Left	0	10	5	0	5	5
				Right	5	5	10	0	0	0
19	18	F	White	Left	10	10	0	0	0	5
				Right	0	0	5	5	-5	5
20	22	M	White	Left	10	10	0	0	-5	0
				Right	10	5	5	5	-5	0
21	19	F	White	Left	0	0	0	-5	-5	5
				Right	5	5	0	0	-5	5
22	18	M	White	Left	0	-5	-5	-5	-10	-10
				Right	0	-5	-5	10	-10	-5
23	28	M	White	Left	0	0	0	0	-10	5
				Right	5	0	0	-5	0	15
24	25	M	White	Left	20	20	10	0	15	20
				Right	25	15	15	10	15	10
25	28	F	White	Left	5	5	5	0	0	5
				Right	5	0	5	-5	0	10
26	22	F	White	Left	10	5	0	0	0	10
				Right	0	0	5	0	0	5
27	23	F	White	Left	5	0	0	0	0	-5
				Right	-5	0	0	0	5	0
28	25	M	White	Left	5	10	10	5	5	15
				Right	-5	0	5	0	5	5

Table 2 (continued)

Subject number	Age	Sex	Race	Ear	Frequency (Hz)					
					250	500	1k	2k	4k	8k
29	28	F	White	Left	10	10	10	15	5	15
				Right	-5	-5	0	0	0	10

Table 3. Subject Practice Thresholds

Subject number	Run number	Frequency (Hz)						
		125	250	500	1k	2k	4k	8k
1	1	30	34	20	24	16	11	6
	2	32	29	21	23	11	5	3
	3	28	26	19	22	14	7	3
	4	28	29	19	21	14	4	2
	5	31	27	19	23	13	6	2
4	1	29	31	19	22	24	8	7
	2	31	29	20	22	25	11	5
	3	30	29	21	24	23	9	6
	4	30	29	24	22	22	9	7
	5	29	31	21	22	23	9	5
5	1	31	27	19	21	6	6	5
	2	32	27	19	21	10	11	7
	3	34	28	19	25	13	11	4
	4	33	29	18	24	12	12	7
	5	36	28	18	21	12	7	7
6	1	29	23	13	13	4	2	2
	2	29	27	12	13	3	-1	-2
	3	25	21	10	14	5	-3	2
	4	28	25	8	9	5	1	4
	5	27	26	11	11	5	0	2
7	1	46	37	28	24	25	22	17
	2	39	37	27	20	26	16	12
	3	32	33	20	17	20	11	4
	4	34	31	19	16	21	11	3
	5	34	29	18	16	19	10	2
8	1	32	34	19	21	18	9	3
	2	29	30	17	19	17	6	4
	3	30	30	19	19	16	7	1

Table 3. (continued)

Subject number	Run number	Frequency (Hz)						
		125	250	500	1k	2k	4k	8k
8	4	30	30	21	20	19	4	3
	5	28	28	19	19	16	3	-2
9	1	27	28	16	15	14	11	6
	2	27	29	15	16	15	11	3
	3	26	28	14	16	16	8	2
	4	25	26	14	16	17	9	3
	5	27	27	18	19	16	10	2
10	1	35	37	21	24	11	15	13
	2	32	33	20	19	13	9	5
	3	35	33	21	22	14	10	7
	4	34	32	21	21	13	12	8
	5	34	34	20	24	12	10	11
11	1	28	29	17	22	17	9	2
	2	30	29	17	22	17	8	1
	3	28	28	17	20	19	10	3
	4	31	28	17	20	18	12	4
	5	32	28	17	19	19	13	5
12	1	32	29	18	13	14	9	7
	2	29	27	20	12	17	8	7
	3	28	26	15	12	16	8	8
	4	32	25	16	11	13	9	8
	5	27	25	16	11	13	9	8
13	1	36	38	27	20	18	12	8
	2	37	37	24	20	16	13	4
	3	38	38	24	22	18	11	1
	4	38	37	25	19	15	11	5
	5	39	38	25	21	16	13	7
14	1	32	31	19	17	17	5	2

Table 3. (continued)

Subject number	Run number	Frequency (Hz)						
		125	250	500	1k	2k	4k	8k
14	2	35	35	22	24	22	10	7
	3	30	31	19	21	16	6	6
	4	30	30	18	17	17	6	5
	5	29	29	17	17	13	8	2
15	1	31	27	20	24	8	4	1
	2	30	28	17	23	10	6	2
	3	29	27	17	21	7	2	0
	4	29	28	19	23	11	2	-2
	5	31	28	17	21	5	1	-1
16	1	39	33	21	22	9	10	2
	2	33	32	19	22	10	8	2
	3	35	35	20	20	9	3	1
	4	33	32	22	23	12	5	5
	5	37	34	24	22	12	7	1
17	1	27	29	19	16	17	10	4
	2	29	27	20	16	16	9	3
	3	29	28	19	17	18	9	5
	4	33	29	18	14	18	11	6
	5	31	33	23	14	19	12	7
18	1	31	29	28	25	18	3	10
	2	34	27	27	31	23	10	25
19	1	27	22	16	4	8	4	0
	2	27	26	14	7	8	-3	-2
	3	25	23	16	7	11	0	-2
	4	28	23	14	8	10	-2	-2
	5	26	20	13	4	10	3	-7
20	1	31	29	14	16	12	16	-1
	2	33	29	15	18	12	17	-3

Table 3. (continued)

Subject number	Run number	Frequency (Hz)						
		125	250	500	1k	2k	4k	8k
20	3	27	30	17	19	15	4	0
	4	30	29	16	21	11	3	-2
	5	32	29	19	25	13	5	0
21	1	27	28	17	16	15	10	4
	2	27	29	17	14	14	8	3
	3	28	25	17	15	14	7	3
	4	28	30	16	14	14	8	7
	5	32	28	18	17	17	10	5
22	1	23	24	12	13	9	3	-3
	2	24	20	17	13	6	1	-4
	3	23	25	10	11	8	4	2
	4	26	26	10	12	13	5	0
	5	22	22	14	12	10	4	1
23	1	25	31	18	15	11	7	4
	2	22	28	15	19	9	7	2
	3	23	25	16	15	6	6	3
	4	21	24	14	16	6	8	2
	5	20	22	14	13	7	5	1
24	1	43	40	31	24	13	14	14
	2	39	36	30	23	12	13	11
	3	37	34	28	22	12	11	9
	4	37	38	27	19	9	9	9
	5	36	38	28	22	10	11	10
25	1	24	25	17	15	9	5	0
	2	22	26	16	9	8	3	-6
	3	27	25	16	10	5	1	-1
	4	24	28	15	12	8	2	-2
	5	22	26	14	15	11	3	-1

Table 3. (continued)

Subject number	Run number	Frequency (Hz)						
		125	250	500	1k	2k	4k	8k
26	1	24	28	16	19	11	4	2
	2	24	23	12	18	10	2	1
	3	25	22	15	16	9	0	0
	4	29	22	12	16	4	1	-2
	5	26	27	17	16	9	-3	-2
27	1	25	22	14	12	11	7	6
	2	27	24	13	11	6	5	3
	3	26	26	12	12	11	7	5
	4	27	24	16	16	9	8	5
	5	31	24	14	12	9	6	3
28	1	27	28	15	11	0	0	1
	2	25	27	15	13	3	1	-3
	3	24	27	13	10	2	0	-2
	4	24	26	16	13	-1	0	-3
	5	24	25	11	11	2	-2	-4
29	1	31	28	18	17	21	11	3
	2	31	29	17	18	17	12	5
	3	28	26	15	15	20	13	5
	4	26	31	17	17	16	12	5
	5	25	27	16	17	20	12	4

Table 4. Subject Earplug Sizes for V-51R and EP100

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
1	SF1	1	B	V-51R	S	S
	SF1	2	A	EP100	S	S
	SF2	3	B	V-51R	S	S
	SF2	4	A	EP100	S	S
	IUF1	5	B	V-51R	S	S
	IUF1	6	A	EP100	S	S
	IUF2	7	B	V-51R	S	S
	IUF2	8	A	EP100	S	S
4	SF1	1	B	V-51R	L	L
	SF1	2	B	EP100	R	R
	SF2	3	B	V-51R	L	L
	SF2	4	B	EP100	R	R
	IUF1	5	B	V-51R	M	M
	IUF1	6	B	EP100	S	S
	IUF2	7	B	V-51R	S	S
	IUF2	8	B	EP100	S	S
5	SF1	1	A	V-51R	L	M
	SF1	2	A	EP100	R	S
	SF2	3	A	V-51R	L	L
	SF2	4	A	EP100	R	R
	IUF1	5	A	V-51R	M	M
	IUF1	6	A	EP100	R	R
	IUF2	7	A	V-51R	M	L
	IUF2	8	A	EP100	S	R
6	SF1	1	A	V-51R	L	L
	SF1	2	B	EP100	R	R
	SF2	3	A	V-51R	M	M
	SF2	4	B	EP100	R	R

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
6	IUF1	5	A	V-51R	L	L
	IUF1	6	B	EP100	R	R
	IUF2	7	A	V-51R	L	L
	IUF2	8	B	EP100	R	R
7	SF1	1	A	EP100	R	R
	SF1	2	B	V-51R	S	S
	SF2	3	A	EP100	S	R
	SF2	4	B	V-51R	M	M
	IUF1	5	A	EP100	S	R
	IUF1	6	B	V-51R	L	L
	IUF2	7	A	EP100	R	R
	IUF2	8	B	V-51R	L	L
8	SF1	1	A	EP100	R	R
	SF1	2	A	V-51R	L	L
	SF2	3	A	EP100	R	R
	SF2	4	A	V-51R	XL	L
	IUF1	5	A	EP100	R	R
	IUF1	6	A	V-51R	L	L
	IUF2	7	A	EP100	R	R
	IUF2	8	A	V-51R	L	L
9	SF1	1	B	EP100	S	S
	SF1	2	B	V-51R	L	M
	SF2	3	B	EP100	R	R
	SF2	4	B	V-51R	L	M
	IUF1	5	B	EP100	R	R
	IUF1	6	B	V-51R	M	M
	IUF2	7	B	EP100	R	R
	IUF2	8	B	V-51R	M	M

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
10	SF1	1	B	EP100	R	R
	SF1	2	A	V-51R	XL	XL
	SF2	3	B	EP100	R	R
	SF2	4	A	V-51R	L	L
	IUF1	5	B	EP100	R	R
	IUF1	6	A	V-51R	L	L
	IUF2	7	B	EP100	R	R
	IUF2	8	A	V-51R	L	L
11	SF1	1	B	EP100	R	R
	SF1	2	A	V-51R	XL	XL
	SF2	3	B	EP100	S	S
	SF2	4	A	V-51R	M	M
	IUF1	5	B	EP100	R	R
	IUF1	6	A	V-51R	L	L
	IUF2	7	B	EP100	R	R
	IUF2	8	A	V-51R	L	L
12	SF1	1	B	EP100	R	S
	SF1	2	B	V-51R	M	S
	SF2	3	B	EP100	R	S
	SF2	4	B	V-51R	S	S
	IUF1	5	B	EP100	S	S
	IUF1	6	B	V-51R	M	M
	IUF2	7	B	EP100	S	S
	IUF2	8	B	V-51R	M	M
13	SF1	1	A	EP100	S	S
	SF1	2	A	V-51R	M	M
	SF2	3	A	EP100	S	S
	SF2	4	A	V-51R	S	S

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
13	IUF1	5	A	EP100	S	S
	IUF1	6	A	V-51R	S	M
	IUF2	7	A	EP100	S	S
	IUF2	8	A	V-51R	S	S
14	SF1	1	A	EP100	R	R
	SF1	2	B	V-51R	M	M
	SF2	3	A	EP100	R	R
	SF2	4	B	V-51R	M	M
	IUF1	5	A	EP100	R	R
	IUF1	6	B	V-51R	L	L
	IUF2	7	A	EP100	R	R
	IUF2	8	B	V-51R	L	L
15	SF1	1	A	V-51R	S	S
	SF1	2	A	EP100	S	S
	SF2	3	A	V-51R	S	S
	SF2	4	A	EP100	S	S
	IUF1	5	A	V-51R	XS	S
	IUF1	6	A	EP100	S	S
	IUF2	7	A	V-51R	XS	S
	IUF2	8	A	EP100	S	S
16	SF1	1	A	V-51R	L	L
	SF1	2	B	EP100	S	S
	SF2	3	A	V-51R	S	S
	SF2	4	B	EP100	S	S
	IUF1	5	A	V-51R	S	S
	IUF1	6	B	EP100	R	R
	IUF2	7	A	V-51R	S	S
	IUF2	8	B	EP100	R	R

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
17	SF1	1	B	V-51R	M	M
	SF1	2	A	EP100	R	R
	SF2	3	B	V-51R	M	M
	SF2	4	A	EP100	R	R
	IUF1	5	B	V-51R	L	L
	IUF1	6	A	EP100	R	R
	IUF2	7	B	V-51R	L	L
	IUF2	8	A	EP100	R	R
19	SF1	1	A	V-51R	XS	XS
	SF1	1	B	EP100	S	S
	SF2	3	A	V-51R	XS	XS
	SF2	3	B	EP100	S	S
	IUF1	5	A	V-51R	XS	XS
	IUF1	5	B	EP100	S	S
	IUF2	7	A	V-51R	XS	XS
	IUF2	7	B	EP100	S	S
20	SF1	1	B	V-51R	L	L
	SF1	2	B	EP100	R	R
	SF2	3	B	V-51R	L	L
	SF2	4	B	EP100	R	R
	IUF1	5	B	V-51R	XL	XL
	IUF1	6	B	EP100	R	R
	IUF2	7	B	V-51R	XL	XL
	IUF2	8	B	EP100	R	R
21	SF1	1	A	V-51R	M	M
	SF1	1	B	EP100	S	S
	SF2	3	A	V-51R	M	M
	SF2	3	B	EP100	S	S

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
21	IUF1	5	A	V-51R	S	S
	IUF1	5	B	EP100	S	S
	IUF2	7	A	V-51R	S	S
	IUF2	7	B	EP100	S	S
22	SF1	1	A	EP100	R	R
	SF1	1	B	V-51R	S	S
	SF2	3	A	EP100	R	R
	SF2	3	B	V-51R	M	M
	IUF1	5	A	EP100	R	R
	IUF1	5	B	V-51R	M	M
	IUF2	7	A	EP100	R	R
	IUF2	7	B	V-51R	M	M
23	SF1	1	A	EP100	R	R
	SF1	1	B	V-51R	XL	XL
	SF2	3	A	EP100	S	S
	SF2	3	B	V-51R	L	L
	IUF1	5	A	EP100	R	S
	IUF1	5	B	V-51R	L	M
	IUF2	7	A	EP100	S	R
	IUF2	7	B	V-51R	M	M
24	SF1	2	A	V-51R	M	M
	SF1	2	B	EP100	S	S
	SF2	4	A	V-51R	M	L
	SF2	4	B	EP100	S	S
	IUF1	6	A	V-51R	M	M
	IUF1	6	B	EP100	S	S
	IUF2	8	A	V-51R	M	M
	IUF2	8	B	EP100	S	S

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
25	SF1	2	A	EP100	R	R
	SF1	2	B	V-51R	M	M
	SF2	4	A	EP100	S	S
	SF2	4	B	V-51R	M	M
	IUF1	6	A	EP100	S	S
	IUF1	6	B	V-51R	S	S
	IUF2	8	A	EP100	S	S
	IUF2	8	B	V-51R	S	S
26	SF1	2	A	V-51R	M	M
	SF1	2	B	EP100	S	S
	SF2	4	A	V-51R	M	M
	SF2	4	B	EP100	S	S
	IUF1	6	A	V-51R	S	M
	IUF1	6	B	EP100	S	S
	IUF2	8	A	V-51R	S	M
	IUF2	8	B	EP100	S	S
27	SF1	2	A	EP100	S	S
	SF1	2	B	V-51R	L	L
	SF2	4	A	EP100	S	S
	SF2	4	B	V-51R	L	L
	IUF1	6	A	EP100	R	R
	IUF1	6	B	V-51R	L	M
	IUF2	8	A	EP100	R	R
	IUF2	8	B	V-51R	L	L
28	SF1	1	A	V-51R	XL	XL
	SF1	2	B	EP100	R	R
	SF2	3	A	V-51R	XL	XL
	SF2	4	B	EP100	R	R

Table 4. (continued)

Subject number	Fit	Visit number	Session	HPD	Left size	Right size
28	IUF1	5	A	V-51R	XL	XL
	IUF1	6	B	EP100	R	R
	IUF2	7	A	V-51R	L	L
	IUF2	8	B	EP100	R	R
29	SF1	1	A	EP100	R	R
	SF1	1	B	V-51R	M	M
	SF2	3	A	EP100	S	R
	SF2	3	B	V-51R	M	M
	IUF1	5	A	EP100	R	R
	IUF1	5	B	V-51R	M	M
	IUF2	7	A	EP100	S	R
	IUF2	7	B	V-51R	M	M

Table 5. Subject Run Attenuations

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
1	SF1	1	A	1	EAR	12	12	15	26	28	38	38
				2	EAR	18	20	21	28	28	38	41
			B	1	V-51R	1	0	1	5	18	20	19
				2	V-51R	3	4	4	8	22	28	21
	SF1	2	A	1	EP100	11	13	18	18	30	38	38
				2	EP100	18	19	23	23	31	40	37
			B	1	UF-1	1	8	15	25	27	29	27
				2	UF-1	1	8	19	28	32	35	31
	SF2	3	A	1	EAR	21	23	27	35	36	43	45
				2	EAR	21	19	27	32	33	39	44
			B	1	V-51R	4	-5	0	4	10	18	16
				2	V-51R	-3	-1	-3	4	18	23	21
	SF2	4	A	1	EP100	6	11	11	16	20	33	30
				2	EP100	17	19	17	19	27	42	40
			B	1	UF-1	4	10	14	26	29	28	28
				2	UF-1	7	14	16	25	24	32	31
	IUF1	5	A	1	EAR	19	27	32	35	35	42	41
				2	EAR	26	31	27	28	33	43	43
			B	1	V-51R	23	19	23	27	27	28	27
				2	V-51R	19	19	16	26	29	25	23
	IUF1	6	A	1	EP100	24	22	20	21	31	43	43
				2	EP100	17	15	20	25	29	39	39
			B	1	UF-1	10	9	20	29	29	33	36
				2	UF-1	7	13	15	30	34	30	36
	IUF2	7	A	1	EAR	32	29	31	31	42	43	44
				2	EAR	28	33	33	39	31	39	41
			B	1	V-51R	7	8	14	22	24	19	18
				2	V-51R	10	7	9	17	23	24	24

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
1	IUF2	8	A	1	EP100	22	23	24	26	32	39	40
				2	EP100	18	20	22	23	27	38	40
			B	1	UF-1	4	9	21	30	34	32	33
				2	UF-1	3	12	18	25	33	27	28
4	SF1	1	A	1	EAR	24	25	32	28	28	38	42
				2	EAR	22	21	25	28	24	38	40
			B	1	V-51R	20	13	16	22	25	29	30
				2	V-51R	3	5	10	7	12	21	20
	SF1	2	A	1	UF-1	7	15	22	28	29	32	34
				2	UF-1	3	12	22	30	25	29	27
			B	1	EP100	34	33	35	33	28	43	45
				2	EP100	29	29	35	28	31	42	44
	SF2	3	A	1	EAR	19	21	26	25	29	36	38
				2	EAR	9	14	16	22	23	37	34
			B	1	V-51R	15	15	17	21	20	28	23
				2	V-51R	11	13	15	18	18	26	19
	SF2	4	A	1	UF-1	8	13	22	29	31	35	36
				2	UF-1	7	12	15	30	30	31	31
			B	1	EP100	16	17	22	24	25	33	29
				2	EP100	17	22	21	26	26	35	30
	IUF1	5	A	1	EAR	24	23	28	29	28	41	46
				2	EAR	26	25	28	30	27	37	43
			B	1	V-51R	1	2	9	6	13	21	18
				2	V-51R	4	18	15	14	18	22	17
	IUF1	6	A	1	UF-1	10	14	20	24	32	32	31
				2	UF-1	7	14	21	31	30	36	38
			B	1	EP100	12	22	26	26	23	33	39
				2	EP100	25	27	34	30	26	37	42

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
4	IUF2	7	A	1	EAR	27	28	34	34	30	41	45
				2	EAR	26	26	31	31	31	38	39
			B	1	V-51R	17	17	22	21	20	27	21
				2	V-51R	13	23	22	22	29	27	26
	IUF2	8	A	1	UF-1	9	12	23	28	32	34	34
				2	UF-1	12	15	19	30	33	35	39
			B	1	EP100	33	31	35	30	34	38	42
				2	EP100	28	27	33	29	37	38	47
5	SF1	1	A	1	V-51R	26	25	25	32	29	34	24
				2	V-51R	25	25	24	27	37	34	30
			B	1	EAR	18	20	21	24	28	36	39
				2	EAR	30	30	29	32	30	34	38
	SF1	2	A	1	EP100	15	19	19	23	36	34	34
				2	EP100	8	8	15	18	31	37	33
			B	1	UF-1	4	14	24	31	34	38	37
				2	UF-1	6	16	23	28	34	37	37
	SF2	3	A	1	V-51R	25	24	23	24	35	34	16
				2	V-51R	26	25	28	28	39	35	28
			B	1	EAR	23	19	23	28	34	36	40
				2	EAR	10	18	21	19	25	37	31
	SF2	4	A	1	EP100	21	18	19	16	31	39	36
				2	EP100	16	18	21	22	25	34	38
			B	1	UF-1	2	13	20	26	26	33	30
				2	UF-1	7	14	19	25	34	31	31
	IUF1	5	A	1	V-51R	25	18	16	23	31	30	30
				2	V-51R	20	25	25	30	34	33	25
			B	1	EAR	26	27	31	29	33	34	34
				2	EAR	32	28	33	32	34	41	40

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
5	IUF1	6	A	1	EP100	23	21	20	26	34	38	40
				2	EP100	27	28	28	28	33	39	41
			B	1	UF-1	2	13	19	25	32	38	35
				2	UF-1	2	11	24	28	33	34	37
	IUF2	7	A	1	V-51R	20	18	20	26	35	35	34
				2	V-51R	25-	18	26	32	36	35	30
			B	1	EAR	34	36	41	41	34	36	38
				2	EAR	35	37	36	35	33	38	33
	IUF2	8	A	1	EP100	24	23	24	25	34	36	34
				2	EP100	24	25	29	27	34	40	38
			B	1	UF-1	4	16	21	29	30	35	34
				2	UF-1	4	20	25	28	33	41	38
6	SF1	1	A	1	V-51R	5	4	3	3	15	22	11
				2	V-51R	-2	-1	4	-9	5	17	14
			B	1	EAR	23	18	21	22	33	42	42
				2	EAR	19	21	24	29	37	37	37
	SF1	2	A	1	UF-1	9	8	18	29	34	33	36
				2	UF-1	13	10	15	29	32	34	36
			B	1	EP100	26	23	25	26	32	48	42
				2	EP100	-3	0	1	2	11	29	14
	SF2	3	A	1	V-51R	7	8	7	17	22	24	12
				2	V-51R	3	4	7	16	20	24	15
			B	1	EAR	13	10	16	23	24	30	38
				2	EAR	29	29	28	30	34	39	35
	SF2	4	A	1	UF-1	6	12	15	27	31	36	36
				2	UF-1	18	11	24	35	36	36	32
			B	1	EP100	25	23	34	28	39	39	33
				2	EP100	20	23	23	34	34	40	32

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
6	IUF1	5	A	1	V-51R	29	32	31	31	38	33	48
				2	V-51R	66	17	11	16	31	33	26
			B	1	EAR	27	25	28	26	33	42	41
				2	EAR	30	32	29	27	36	40	42
	IUF1	6	A	1	UF-1	11	12	14	25	32	33	39
				2	UF-1	10	10	24	29	37	35	36
			B	1	EP100	27	24	17	26	40	40	40
				2	EP100	25	24	27	26	35	40	38
	IUF2	7	A	1	V-51R	27	23	24	25	34	42	45
				2	V-51R	27	28	27	22	32	45	46
			B	1	EAR	31	28	28	36	29	37	35
				2	EAR	19	17	24	21	35	32	26
	IUF2	8	A	1	UF-1	6	10	21	31	27	34	33
				2	UF-1	8	15	23	27	32	34	35
			B	1	EP100	1	0	-1	1	13	22	13
				2	EP100	-1	4	9	11	23	21	18
7	SF1	1	A	1	EP100	26	28	28	28	33	39	41
				2	EP100	25	24	23	24	31	35	35
			B	1	UF-1	12	19	26	29	36	37	37
				2	UF-1	10	19	29	32	35	35	37
	SF1	2	A	1	EAR	19	10	14	15	23	31	33
				2	EAR	19	17	18	16	22	33	36
			B	1	V-51R	6	2	5	6	5	11	13
				2	V-51R	2	1	-2	-1	4	10	8
	SF2	3	A	1	EP100	3	4	6	16	16	17	13
				2	EP100	4	4	6	13	17	14	14
			B	1	UF-1	10	15	22	30	33	35	36
				2	UF-1	13	18	21	28	33	34	37

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
7	SF2	4	A	1	EAR	14	15	11	20	19	30	33
				2	EAR	16	15	13	19	25	33	38
			B	1	V-51R	4	5	4	7	11	14	13
				2	V-51R	1	5	4	8	8	11	13
	IUF1	5	A	1	EP100	22	19	17	21	23	28	27
				2	EP100	14	8	13	18	21	23	20
			B	1	UF-1	9	13	17	30	32	31	36
				2	UF-1	6	13	22	28	35	37	35
	IUF1	6	A	1	EAR	20	20	19	25	25	31	36
				2	EAR	17	17	12	20	26	27	31
			B	1	V-51R	15	17	13	18	18	16	17
				2	V-51R	12	15	10	18	14	12	17
	IUF2	7	A	1	EP100	18	20	13	23	20	28	28
				2	EP100	20	22	20	23	24	30	30
			B	1	UF-1	7	12	21	31	35	35	35
				2	UF-1	7	16	23	30	34	35	35
	IUF2	8	A	1	EAR	20	17	20	22	29	33	34
				2	EAR	27	24	23	27	33	36	31
			B	1	V-51R	13	13	8	18	20	15	17
				2	V-51R	8	8	6	18	19	14	12
8	SF1	1	A	1	EP100	29	28	22	21	28	41	38
				2	EP100	16	14	14	12	20	29	28
			B	1	UF-1	7	14	19	35	32	37	39
				2	UF-1	4	14	24	37	36	39	42
	SF1	2	A	1	V-51R	15	13	12	12	19	29	23
				2	V-51R	18	15	14	17	23	30	25
			B	1	EAR	5	13	17	16	24	33	31
				2	EAR	35	35	39	37	29	41	39

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
8	SF2	3	A	1	EP100	17	16	17	20	21	38	36
				2	EP100	20	19	22	21	27	41	34
			B	1	UF-1	7	15	23	35	32	37	38
				2	UF-1	6	12	22	32	32	40	39
	SF2	4	A	1	V-51R	16	16	18	15	21	30	22
				2	V-51R	18	16	17	17	26	32	30
			B	1	EAR	21	24	28	30	29	40	41
				2	EAR	40	39	41	39	34	42	35
	IUF1	5	A	1	EP100	25	21	25	23	27	40	45
				2	EP100	19	20	19	20	25	37	41
			B	1	UF-1	11	14	19	35	31	40	38
				2	UF-1	9	16	22	35	35	41	39
	IUF1	6	A	1	V-51R	16	16	16	21	25	33	31
				2	V-51R	20	20	23	20	18	29	26
			B	1	EAR	37	39	41	32	32	43	40
				2	EAR	34	38	39	35	31	39	37
	IUF2	7	A	1	EP100	20	18	26	24	25	44	43
				2	EP100	24	24	27	23	27	37	41
			B	1	UF-1	10	11	20	33	34	36	35
				2	UF-1	6	13	17	35	34	40	37
	IUF2	8	A	1	V-51R	20	18	20	16	24	35	35
				2	V-51R	20	23	23	22	26	30	31
			B	1	EAR	38	40	46	37	34	41	43
				2	EAR	43	43	43	34	32	38	39
9	SF1	1	A	1	UF-1	17	9	23	27	29	31	32
				2	UF-1	12	16	19	26	30	31	35
			B	1	EP100	21	21	19	23	25	36	34
				2	EP100	6	8	1	11	17	26	21

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
9	SF1	2	A	1	EAR	19	21	17	23	30	35	33
				2	EAR	9	8	7	14	26	28	23
			B	1	V-51R	-1	2	3	8	16	20	21
				2	V-51R	3	3	2	3	18	26	22
	SF2	3	A	1	UF-1	8	11	17	29	28	29	32
				2	UF-1	6	12	16	16	22	32	33
			B	1	EP100	23	21	18	25	32	34	30
				2	EP100	23	26	22	27	40	38	40
	SF2	4	A	1	EAR	21	22	21	22	31	41	41
				2	EAR	19	19	18	19	32	39	41
			B	1	V-51R	-2	3	-6	6	14	26	19
				2	V-51R	2	0	-3	-1	10	19	17
	IUF1	5	A	1	UF-1	6	12	21	31	31	33	36
				2	UF-1	14	14	21	31	34	35	38
			B	1	EP100	21	19	24	26	33	44	44
				2	EP100	25	27	29	31	32	45	42
	IUF1	6	A	1	EAR	24	21	28	33	34	44	43
				2	EAR	18	17	21	24	36	39	41
			B	1	V-51R	16	17	19	26	29	29	29
				2	V-51R	16	11	20	18	25	33	25
	IUF2	7	A	1	UF-1	5	8	14	26	28	32	35
				2	UF-1	8	12	22	28	26	32	28
			B	1	EP100	14	20	22	26	32	47	43
				2	EP100	19	22	24	19	27	33	38
	IUF2	8	A	1	EAR	18	15	21	22	34	47	41
				2	EAR	13	15	19	21	33	44	38
			B	1	V-51R	12	14	16	17	25	34	22
				2	V-51R	-1	1	5	8	15	30	21

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
10	SF1	1	A	1	UF-1	7	16	27	40	45	37	41
				2	UF-1	9	10	28	29	40	38	35
			B	1	EP100	17	18	23	20	34	42	41
				2	EP100	23	21	25	26	46	41	46
	SF1	2	A	1	V-51R	3	3	1	6	22	19	12
				2	V-51R	2	-6	-1	7	23	20	17
			B	1	EAR	8	7	12	18	38	30	19
				2	EAR	13	11	15	20	39	33	32
	SF2	3	A	1	UF-1	7	13	25	35	38	36	42
				2	UF-1	6	15	21	28	43	38	40
			B	1	EP100	28	28	30	38	39	46	40
				2	EP100	20	20	21	24	43	40	43
	SF2	4	A	1	V-51R	3	0	0	4	18	15	13
				2	V-51R	0	9	2	1	19	18	11
			B	1	EAR	19	15	21	25	39	43	37
				2	EAR	20	18	20	23	41	36	37
	IUF1	5	A	1	UF-1	10	17	26	35	35	36	40
				2	UF-1	7	15	26	36	39	34	38
			B	1	EP100	25	32	29	41	42	45	44
				2	EP100	16	22	23	25	40	35	34
	IUF1	6	A	1	V-51R	6	6	5	10	25	23	18
				2	V-51R	13	15	15	30	33	35	33
			B	1	EAR	23	15	18	24	39	40	38
				2	EAR	18	16	20	25	36	35	32
	IUF2	7	A	1	UF-1	12	11	24	37	35	40	40
				2	UF-1	7	14	26	36	40	39	43
			B	1	EP100	26	26	31	36	35	39	42
				2	EP100	21	19	22	25	34	40	32

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
10	IUF2	8	A	1	V-51R	22	15	13	22	42	38	29
				2	V-51R	16	14	18	32	38	37	30
			B	1	EAR	22	22	22	27	41	38	40
				2	EAR	18	21	21	22	35	42	37
11	SF1	1	A	1	EAR	18	19	13	19	28	40	35
				2	EAR	21	18	14	26	30	40	41
			B	1	EP100	4	4	4	4	8	21	19
				2	EP100	4	2	-1	5	15	17	14
	SF1	2	A	1	V-51R	14	15	15	25	22	24	24
				2	V-51R	16	13	18	21	19	29	23
			B	1	UF-1	10	15	17	32	37	36	39
				2	UF-1	11	17	22	31	35	39	41
	SF2	3	A	1	EAR	30	28	31	30	33	44	43
				2	EAR	30	31	31	38	33	41	44
			B	1	EP100	5	2	3	18	10	23	15
				2	EP100	0	2	1	12	11	24	18
	SF2	4	A	1	V-51R	1	1	2	8	12	18	16
				2	V-51R	6	5	10	16	12	24	14
			B	1	UF-1	10	13	21	31	37	36	39
				2	UF-1	8	14	14	32	37	35	36
	IUF1	5	A	1	EAR	35	36	37	39	31	39	41
				2	EAR	31	31	38	40	33	42	42
			B	1	EP100	21	21	27	30	29	41	42
				2	EP100	22	22	19	25	32	41	32
	IUF1	6	A	1	V-51R	17	17	13	27	22	27	19
				2	V-51R	17	17	13	20	19	26	22
			B	1	UF-1	9	11	18	30	37	39	35
				2	UF-1	6	14	20	29	30	34	37

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
11	IUF2	7	A	1	EAR	24	24	30	33	33	38	44
				2	EAR	31	29	32	37	28	43	41
			B	1	EP100	20	20	14	19	25	36	28
				2	EP100	21	23	23	27	23	39	32
	IUF2	8	A	1	V-51R	21	22	22	27	26	29	22
				2	V-51R	23	16	14	26	24	26	20
			B	1	UF-1	10	12	14	27	30	34	35
				2	UF-1	10	14	17	27	35	34	36
12	SF1	1	A	1	EAR	21	18	20	24	29	36	33
				2	EAR	22	30	16	23	31	33	32
			B	1	EP100	-1	2	0	4	15	19	15
				2	EP100	3	11	6	5	21	22	11
	SF1	2	A	1	UF-1	8	13	21	31	33	37	38
				2	UF-1	7	18	22	34	27	34	38
			B	1	V-51R	24	18	26	24	36	27	24
				2	V-51R	18	24	21	25	37	27	24
	SF2	3	A	1	EAR	29	27	32	31	35	42	40
				2	EAR	22	22	28	28	29	37	29
			B	1	EP100	17	21	19	23	30	30	27
				2	EP100	7	12	17	18	24	20	21
	SF2	4	A	1	UF-1	7	24	22	32	31	36	36
				2	UF-1	7	13	23	30	30	31	34
			B	1	V-51R	20	23	21	31	32	28	25
				2	V-51R	13	22	19	25	33	31	22
	IUF1	5	A	1	EAR	16	12	14	23	33	33	38
				2	EAR	15	16	14	24	32	37	37
			B	1	EP100	17	19	24	25	33	34	37
				2	EP100	17	14	18	21	29	33	28

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
12	IUF1	6	A	1	UF-1	7	10	19	26	28	31	31
				2	UF-1	4	14	22	28	33	31	30
			B	1	V-51R	25	16	22	26	36	31	24
				2	V-51R	28	30	23	26	37	33	27
	IUF2	7	A	1	EAR	22	20	23	22	35	34	41
				2	EAR	18	21	17	25	30	35	35
			B	1	EP100	25	28	26	30	34	30	39
				2	EP100	27	24	25	25	36	40	35
	IUF2	8	A	1	UF-1	5	15	25	25	33	32	34
				2	UF-1	4	17	20	30	35	31	35
			B	1	V-51R	15	14	15	17	28	32	24
				2	V-51R	12	19	19	21	35	27	26
13	SF1	1	A	1	EP100	0	1	4	-3	-3	6	3
				2	EP100	-2	5	-1	2	-5	3	6
			B	1	EAR	4	8	13	1	21	22	25
				2	EAR	1	7	13	16	18	21	25
	SF1	2	A	1	V-51R	3	3	3	1	2	10	8
				2	V-51R	2	1	4	6	4	9	9
			B	1	UF-1	3	10	19	20	30	33	31
				2	UF-1	3	11	16	21	29	26	30
	SF2	3	A	1	EP100	-3	1	-2	-2	0	5	3
				2	EP100	5	1	1	1	-3	5	6
			B	1	EAR	14	16	18	17	28	27	31
				2	EAR	18	7	11	11	25	20	26
	SF2	4	A	1	V-51R	4	0	4	9	5	10	12
				2	V-51R	-3	-1	-3	0	-3	1	8
			B	1	UF-1	5	12	20	28	29	31	29
				2	UF-1	3	10	18	27	27	23	34

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
13	IUF1	5	A	1	EP100	17	21	26	25	26	34	34
				2	EP100	26	23	27	34	30	37	41
			B	1	EAR	12	15	25	25	30	35	34
				2	EAR	25	28	28	30	32	38	38
	IUF1	6	A	1	V-51R	29	29	37	29	40	32	33
				2	V-51R	6	5	11	2	15	20	14
			B	1	UF-1	4	11	17	24	33	37	37
				2	UF-1	5	14	24	24	34	33	41
	IUF2	7	A	1	EP100	1	3	11	12	19	24	22
				2	EP100	15	17	25	25	24	30	33
			B	1	EAR	34	32	41	36	36	41	48
				2	EAR	32	32	34	30	27	35	41
	IUF2	8	A	1	V-51R	23	24	28	30	35	27	28
				2	V-51R	25	22	26	30	28	25	26
			B	1	UF-1	7	14	15	29	38	35	27
				2	UF-1	2	13	12	30	34	30	32
14	SF1	1	A	1	EP100	5	0	5	3	6	17	15
				2	EP100	0	2	0	1	5	18	11
			B	1	EAR	17	21	24	28	30	33	32
				2	EAR	11	12	15	16	24	31	30
	SF1	2	A	1	UF-1	12	14	25	33	37	34	34
				2	UF-1	14	12	23	31	35	32	35
			B	1	V-51R	2	-3	1	1	8	12	9
				2	V-51R	-1	0	5	7	11	19	9
	SF2	3	A	1	EP100	2	0	-1	-1	6	15	11
				2	EP100	2	7	25	3	6	16	13
			B	1	EAR	22	24	27	29	30	38	35
				2	EAR	23	30	34	28	33	43	40

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
14	SF2	4	A	1	UF-1	8	16	22	31	34	37	36
				2	UF-1	8	17	25	33	36	38	34
			B	1	V-51R	4	1	1	6	9	16	10
				2	V-51R	-2	2	0	0	6	18	11
	IUF1	5	A	1	EP100	30	34	31	33	38	44	45
				2	EP100	5	6	9	10	11	24	18
			B	1	EAR	25	24	30	33	38	43	42
				2	EAR	35	37	41	38	37	44	44
	IUF1	6	A	1	UF-1	11	17	22	39	36	37	34
				2	UF-1	10	16	23	37	36	37	35
			B	1	V-51R	0	2	1	7	17	18	11
				2	V-51R	0	-1	0	3	13	20	14
	IUF2	7	A	1	EP100	33	32	33	37	35	43	45
				2	EP100	27	28	27	35	34	43	43
			B	1	EAR	29	30	32	34	36	43	40
				2	EAR	25	29	30	36	35	43	39
	IUF2	8	A	1	UF-1	12	17	23	37	36	38	38
				2	UF-1	14	19	24	42	38	34	38
			B	1	V-51R	0	1	2	13	14	19	12
				2	V-51R	4	-1	1	11	13	17	12
15	SF1	1	A	1	V-51R	7	10	14	30	39	36	34
				2	V-51R	10	15	14	30	33	34	27
			B	1	UF-1	4	13	24	35	36	36	38
				2	UF-1	3	15	17	28	36	34	34
	SF1	2	A	1	EP100	22	26	31	26	40	47	43
				2	EP100	26	28	32	25	42	39	40
			B	1	EAR	20	17	23	25	35	44	43
				2	EAR	22	24	25	29	34	45	42

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
15	SF2	3	A	1	V-51R	20	20	19	31	35	36	27
				2	V-51R	17	20	22	27	36	38	28
			B	1	UF-1	8	13	20	30	35	38	39
				2	UF-1	5	15	22	30	36	37	35
	SF2	4	A	1	EP100	28	29	32	30	42	46	42
				2	EP100	27	24	26	23	37	44	46
			B	1	EAR	23	27	27	27	38	43	39
				2	EAR	29	26	34	28	33	43	42
	IUF1	5	A	1	V-51R	27	25	25	33	44	37	28
				2	V-51R	23	22	21	24	38	41	37
			B	1	UF-1	7	15	20	33	36	38	37
				2	UF-1	4	12	18	30	34	35	34
	IUF1	6	A	1	EP100	25	26	28	29	44	47	42
				2	EP100	19	22	27	26	38	39	38
			B	1	EAR	32	31	33	35	33	39	44
				2	EAR	32	33	33	36	37	44	42
	IUF2	7	A	1	V-51R	21	22	23	23	42	39	32
				2	V-51R	25	23	22	31	39	37	35
			B	1	UF-1	7	12	19	28	34	34	35
				2	UF-1	8	14	19	28	31	35	39
	IUF2	8	A	1	EP100	25	26	28	24	38	44	43
				2	EP100	25	23	26	23	32	43	42
			B	1	EAR	29	30	29	33	35	42	42
				2	EAR	27	30	34	34	36	40	41
16	SF1	1	A	1	V-51R	22	21	23	23	31	25	25
				2	V-51R	14	11	17	19	30	21	27
			B	1	UF-1	22	14	24	34	45	37	37
				2	UF-1	13	14	24	30	43	37	35

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
16	SF1	2	A	1	EAR	14	14	22	25	30	26	30
				2	EAR	20	27	27	30	37	36	37
			B	1	EP100	2	9	6	15	22	28	21
				2	EP100	1	5	12	14	35	27	29
	SF2	3	A	1	V-51R	-1	0	4	1	23	15	11
				2	V-51R	-1	1	6	9	24	14	15
			B	1	UF-1	8	17	24	33	40	37	34
				2	UF-1	7	13	20	36	52	34	40
	SF2	4	A	1	EAR	19	22	25	23	35	34	38
				2	EAR	27	23	24	28	31	30	37
			B	1	EP100	5	12	16	20	30	24	31
				2	EP100	3	9	5	14	23	21	48
	IUF1	5	A	1	V-51R	5	7	13	17	24	28	27
				2	V-51R	7	6	5	15	27	26	21
			B	1	UF-1	6	16	28	30	38	35	37
				2	UF-1	8	17	12	28	34	38	33
	IUF1	6	A	1	EAR	25	26	29	34	42	40	42
				2	EAR	34	29	31	34	37	43	44
			B	1	EP100	24	26	28	31	49	44	53
				2	EP100	22	18	21	24	43	45	46
	IUF2	7	A	1	V-51R	4	4	11	20	25	27	26
				2	V-51R	5	5	13	19	27	26	23
			B	1	UF-1	9	13	18	34	36	40	36
				2	UF-1	7	12	21	32	35	38	39
	IUF2	8	A	1	EAR	26	31	33	39	39	41	46
				2	EAR	26	28	29	32	42	41	41
			B	1	EP100	23	24	32	27	45	44	47
				2	EP100	23	25	27	27	39	43	44

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
17	SF1	1	A	1	UF-1	7	12	21	30	25	30	30
				2	UF-1	10	12	23	38	32	36	36
			B	1	V-51R	24	22	21	24	33	33	29
				2	V-51R	27	23	25	29	30	38	40
	SF1	2	A	1	EP100	19	17	17	28	25	35	35
				2	EP100	3	8	9	20	21	30	27
			B	1	EAR	12	10	16	26	25	30	33
				2	EAR	26	28	32	29	29	35	40
	SF2	3	A	1	UF-1	7	12	22	29	30	33	35
				2	UF-1	7	12	18	31	33	31	33
			B	1	V-51R	18	16	17	14	27	27	19
				2	V-51R	1	3	7	7	19	19	15
	SF2	4	A	1	EP100	18	16	18	29	26	35	34
				2	EP100	21	14	21	27	28	34	33
			B	1	EAR	26	22	26	29	29	37	39
				2	EAR	10	17	24	31	29	35	43
	IUF1	5	A	1	UF-1	5	13	17	27	32	33	30
				2	UF-1	4	17	22	28	36	33	36
			B	1	V-51R	18	19	19	26	28	33	33
				2	V-51R	11	10	16	22	24	31	32
	IUF1	6	A	1	EP100	22	19	24	27	30	38	36
				2	EP100	21	15	20	24	21	34	34
			B	1	EAR	28	26	34	35	29	36	41
				2	EAR	22	21	29	29	31	37	39
	IUF2	7	A	1	UF-1	5	9	16	25	30	30	32
				2	UF-1	5	8	21	28	32	32	34
			B	1	V-51R	19	15	17	24	26	26	33
				2	V-51R	17	15	17	25	28	27	26

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
17	IUF2	8	A	1	EP100	29	27	29	33	37	39	42
				2	EP100	24	20	22	27	33	34	43
			B	1	EAR	33	31	37	36	33	36	38
				2	EAR	32	32	40	36	33	37	39
19	SF1	1	A	1	V-51R	-2	0	-2	-1	1	13	9
				2	V-51R	5	-1	-2	5	7	14	9
			B	1	EP100	1	4	2	2	9	10	14
				2	EP100	4	0	4	3	11	15	14
	SF1	2	A	1	EAR	11	20	20	27	29	37	35
				2	EAR	16	19	21	30	32	38	23
			B	1	UF-1	7	15	25	36	32	36	31
				2	UF-1	3	17	22	30	31	33	35
	SF2	3	A	1	V-51R	-1	2	1	0	2	13	11
				2	V-51R	-2	0	4	4	3	13	12
			B	1	EP100	-1	0	-3	-1	3	13	15
				2	EP100	4	5	-1	-2	5	12	12
	SF2	4	A	1	EAR	20	20	21	27	30	37	36
				2	EAR	10	13	14	21	27	30	25
			B	1	UF-1	6	15	23	32	36	34	36
				2	UF-1	6	14	23	32	33	35	36
	IUF1	5	A	1	V-51R	2	2	2	4	8	13	11
				2	V-51R	1	-1	1	6	18	22	19
			B	1	EP100	2	2	1	7	7	19	14
				2	EP100	0	-1	0	4	9	20	15
	IUF1	6	A	1	EAR	8	10	20	22	27	31	30
				2	EAR	22	23	28	29	30	38	40
			B	1	UF-1	0	14	25	34	32	40	39
				2	UF-1	6	14	22	34	33	35	35

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
19	IUF2	7	A	1	V-51R	0	3	6	8	14	21	19
				2	V-51R	1	0	3	7	10	15	16
			B	1	EP100	-3	3	0	1	9	21	17
				2	EP100	-2	2	5	5	11	23	19
	IUF2	8	A	1	EAR	22	24	29	35	29	37	37
				2	EAR	20	25	28	31	30	39	40
			B	1	UF-1	8	17	24	34	34	38	33
				2	UF-1	3	11	22	28	32	38	36
20	SF1	1	A	1	UF-1	7	18	27	35	36	38	38
				2	UF-1	7	14	24	30	25	30	28
			B	1	V-51R	18	16	19	23	25	26	18
				2	V-51R	6	9	1	5	18	23	17
	SF1	2	A	1	EAR	26	23	28	28	36	43	40
				2	EAR	32	37	41	42	40	42	44
			B	1	EP100	20	35	23	22	32	41	35
				2	EP100	5	3	3	12	21	22	26
	SF2	3	A	1	UF-1	7	11	23	33	38	36	33
				2	UF-1	4	15	20	28	36	33	37
			B	1	V-51R	4	1	3	3	18	17	18
				2	V-51R	11	6	6	-3	20	33	15
	SF2	4	A	1	EAR	30	32	38	39	39	46	43
				2	EAR	34	33	38	38	40	47	45
			B	1	EP100	5	0	1	11	27	28	21
				2	EP100	7	5	4	10	20	23	20
	IUF1	5	A	1	UF-1	10	14	22	33	42	39	37
				2	UF-1	8	13	26	36	35	34	37
			B	1	V-51R	21	14	18	22	27	28	27
				2	V-51R	22	23	22	32	34	34	27

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
20	IUF1	6	A	1	EAR	34	38	45	40	37	44	43
				2	EAR	32	24	34	29	41	42	47
			B	1	EP100	25	29	29	27	39	45	40
				2	EP100	30	24	25	24	35	42	40
	IUF2	7	A	1	UF-1	8	18	29	33	39	40	39
				2	UF-1	10	16	27	35	37	35	38
			B	1	V-51R	3	6	2	6	27	26	16
				2	V-51R	4	2	4	13	22	27	16
	IUF2	8	A	1	EAR	26	30	32	31	36	42	46
				2	EAR	33	42	39	39	41	40	39
			B	1	EP100	19	19	27	22	32	41	40
				2	EP100	28	23	28	22	36	43	47
21	SF1	1	A	1	V-51R	-2	1	5	5	13	19	16
				2	V-51R	3	0	6	8	10	22	13
			B	1	EP100	0	3	1	6	14	21	18
				2	EP100	0	-2	0	7	19	22	20
	SF1	2	A	1	UF-1	0	9	11	22	31	28	30
				2	UF-1	1	8	17	27	31	31	29
			B	1	EAR	20	20	24	22	34	43	36
				2	EAR	10	14	11	18	30	39	27
	SF2	3	A	1	V-51R	4	3	4	10	16	22	16
				2	V-51R	-1	-2	1	7	9	17	16
			B	1	EP100	22	19	27	26	30	40	37
				2	EP100	2	-2	6	10	21	25	23
	SF2	4	A	1	UF-1	8	16	22	29	37	30	32
				2	UF-1	11	15	22	20	31	34	28
			B	1	EAR	26	18	22	20	33	39	35
				2	EAR	9	8	13	25	33	35	36

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
21	IUF1	5	A	1	V-51R	10	7	18	19	27	29	23
				2	V-51R	-3	4	0	14	17	24	19
			B	1	EP100	2	0	14	14	29	33	24
				2	EP100	23	23	31	27	34	40	43
	IUF1	6	A	1	UF-1	9	12	21	31	40	38	34
				2	UF-1	12	14	22	29	39	37	35
			B	1	EAR	23	22	30	29	36	42	43
				2	EAR	26	23	34	29	34	39	40
	IUF2	7	A	1	V-51R	29	26	30	28	33	38	26
				2	V-51R	1	2	10	13	21	28	18
			B	1	EP100	23	22	25	27	32	40	39
				2	EP100	23	21	23	26	28	41	41
	IUF2	8	A	1	UF-1	7	12	20	32	39	42	38
				2	UF-1	8	18	25	36	36	42	40
			B	1	EAR	36	39	45	36	35	43	40
				2	EAR	37	36	42	40	35	42	38
22	SF1	1	A	1	EP100	34	32	37	40	23	43	44
				2	EP100	34	29	39	37	36	43	45
			B	1	V-51R	29	27	33	28	36	41	36
				2	V-51R	24	19	24	22	31	40	38
	SF1	2	A	1	EAR	33	30	37	41	35	47	41
				2	EAR	28	33	38	43	32	39	40
			B	1	UF-1	11	15	22	33	33	38	36
				2	UF-1	10	12	22	33	30	41	35
	SF2	3	A	1	EP100	28	26	34	39	34	40	40
				2	EP100	31	27	36	43	38	46	44
			B	1	V-51R	33	28	35	33	35	35	34
				2	V-51R	28	23	29	37	34	35	23

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
22	SF2	4	A	1	EAR	29	33	40	48	40	46	43
				2	EAR	40	38	48	49	30	43	45
			B	1	UF-1	11	12	25	37	38	37	33
				2	UF-1	10	11	19	35	35	35	37
	IUF1	5	A	1	EP100	34	37	36	41	43	48	45
				2	EP100	34	29	38	35	35	42	45
			B	1	V-51R	27	23	21	34	34	34	30
				2	V-51R	8	8	11	18	30	33	24
	IUF1	6	A	1	EAR	38	41	43	48	32	41	42
				2	EAR	39	35	44	41	31	40	42
			B	1	UF-1	6	13	21	36	31	34	37
				2	UF-1	7	13	20	41	37	34	39
	IUF2	7	A	1	EP100	37	32	36	38	31	45	46
				2	EP100	28	26	28	31	33	42	43
			B	1	V-51R	15	9	15	23	23	28	18
				2	V-51R	18	13	7	14	28	26	21
	IUF2	8	A	1	EAR	38	35	39	42	30	45	43
				2	EAR	31	31	35	42	27	42	43
			B	1	UF-1	9	12	19	33	37	38	36
				2	UF-1	5	13	19	28	20	34	39
23	SF1	1	A	1	EP100	22	21	23	23	35	36	31
				2	EP100	1	4	10	14	30	27	23
			B	1	V-51R	20	16	20	24	35	29	27
				2	V-51R	19	18	17	23	33	29	28
	SF1	2	A	1	UF-1	9	15	25	34	39	39	40
				2	UF-1	14	17	25	36	38	40	40
			B	1	EAR	23	21	17	21	39	34	34
				2	EAR	21	18	19	24	39	38	35

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
23	SF2	3	A	1	EP100	23	22	23	28	37	35	38
				2	EP100	19	17	20	20	35	29	31
			B	1	V-51R	21	18	21	27	36	28	23
				2	V-51R	18	14	21	19	30	24	24
	SF2	4	A	1	UF-1	14	14	26	38	41	38	42
				2	UF-1	9	17	24	35	37	38	39
			B	1	EAR	18	20	22	25	37	33	38
				2	EAR	24	20	23	22	38	37	35
	IUF1	5	A	1	EP100	25	27	30	32	38	38	40
				2	EP100	33	32	39	36	40	43	42
			B	1	V-51R	24	19	20	26	41	29	24
				2	V-51R	20	15	18	24	36	25	24
	IUF1	6	A	1	UF-1	7	15	22	30	39	36	38
				2	UF-1	10	15	22	36	39	40	40
			B	1	EAR	27	27	30	27	39	36	46
				2	EAR	30	27	31	30	39	36	39
	IUF2	7	A	1	EP100	25	24	27	33	40	39	41
				2	EP100	24	21	27	28	40	41	38
			B	1	V-51R	24	21	24	27	34	27	27
				2	V-51R	10	13	17	21	30	24	23
	IUF2	8	A	1	UF-1	8	13	24	31	39	36	39
				2	UF-1	10	13	24	34	37	38	39
			B	1	EAR	29	22	30	29	39	36	40
				2	EAR	24	24	28	29	42	38	39
24	SF1	1	A	1	EAR	18	19	22	28	33	39	38
				2	EAR	14	20	18	25	24	33	32
			B	1	UF-1	5	17	24	29	35	38	36
				2	UF-1	3	13	21	30	34	35	34

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
24	SF1	2	A	1	V-51R	2	6	7	18	23	26	23
				2	V-51R	4	5	7	14	21	26	21
			B	1	EP100	3	2	5	6	20	23	21
				2	EP100	1	4	-1	3	21	22	16
	SF2	3	A	1	EAR	18	25	24	28	32	33	37
				2	EAR	25	33	31	33	33	38	35
			B	1	UF-1	1	15	22	31	33	34	35
				2	UF-1	5	18	25	29	34	32	35
	SF2	4	A	1	V-51R	6	6	11	18	25	27	23
				2	V-51R	7	9	12	18	24	27	24
			B	1	EP100	0	3	1	12	22	22	21
				2	EP100	2	3	2	12	23	21	17
	IUF1	5	A	1	EAR	33	35	33	29	37	37	37
				2	EAR	35	37	32	25	36	39	36
			B	1	UF-1	1	16	22	29	39	34	33
				2	UF-1	4	11	21	23	29	32	34
	IUF1	6	A	1	V-51R	2	2	9	15	27	27	18
				2	V-51R	4	11	12	18	25	20	22
			B	1	EP100	-2	-1	0	12	25	23	24
				2	EP100	0	1	4	17	29	33	25
	IUF2	7	A	1	EAR	28	43	37	31	33	36	38
				2	EAR	24	31	31	31	35	37	36
			B	1	UF-1	1	12	20	23	31	32	33
				2	UF-1	0	12	24	27	30	39	35
	IUF2	8	A	1	V-51R	6	10	12	27	24	25	18
				2	V-51R	3	6	5	12	23	28	23
			B	1	EP100	-1	4	2	11	22	26	24
				2	EP100	0	-1	4	15	26	27	26

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
25	SF1	1	A	1	EAR	-2	2	1	4	15	23	18
				2	EAR	13	16	18	29	27	40	32
			B	1	UF-1	16	13	16	28	37	33	33
				2	UF-1	16	12	21	31	32	39	35
	SF1	2	A	1	EP100	1	1	2	0	1	8	5
				2	EP100	0	2	2	-5	-1	7	6
			B	1	V-51R	2	5	5	8	21	25	18
				2	V-51R	1	2	2	9	15	19	15
	SF2	3	A	1	EAR	17	14	17	23	28	36	35
				2	EAR	17	18	22	21	29	41	38
			B	1	UF-1	15	16	18	28	29	34	34
				2	UF-1	13	16	19	29	36	33	31
	SF2	4	A	1	EP100	1	3	2	1	-1	7	5
				2	EP100	2	2	-2	-2	7	8	7
			B	1	V-51R	-3	3	3	-2	13	19	13
				2	V-51R	-3	-2	-3	0	14	19	17
	IUF1	5	A	1	EAR	19	17	22	24	34	42	38
				2	EAR	18	13	15	15	27	38	35
			B	1	UF-1	21	18	19	28	33	36	33
				2	UF-1	15	12	14	27	34	36	31
	IUF1	6	A	1	EP100	28	26	24	24	32	41	40
				2	EP100	1	-1	0	7	15	18	20
			B	1	V-51R	27	28	31	30	34	36	32
				2	V-51R	32	34	35	34	33	34	33
	IUF2	7	A	1	EAR	8	8	12	13	21	26	22
				2	EAR	20	22	27	33	37	41	39
			B	1	UF-1	11	19	17	29	33	35	33
				2	UF-1	11	18	22	26	35	39	30

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
25	IUF2	8	A	1	EP100	4	11	14	16	27	36	28
				2	EP100	6	7	10	15	28	30	29
			B	1	V-51R	2	7	11	12	22	28	22
				2	V-51R	27	29	27	32	31	32	28
26	SF1	1	A	1	UF-1	2	12	22	28	38	37	37
				2	UF-1	3	9	20	27	34	38	33
			B	1	EAR	12	15	16	18	30	35	34
				2	EAR	11	11	9	19	29	35	34
	SF1	2	A	1	V-51R	0	1	2	1	22	23	16
				2	V-51R	7	12	16	20	38	24	20
			B	1	EP100	17	21	23	23	37	35	38
				2	EP100	20	20	22	26	29	37	41
	SF2	3	A	1	UF-1	-3	5	13	26	35	31	26
				2	UF-1	4	5	13	29	40	34	26
			B	1	EAR	9	12	5	14	36	22	36
				2	EAR	9	7	13	17	41	30	35
	SF2	4	A	1	V-51R	6	6	6	19	28	31	25
				2	V-51R	26	26	30	34	39	35	29
			B	1	EP100	25	24	27	28	30	40	41
				2	EP100	22	21	26	24	39	41	39
	IUF1	5	A	1	UF-1	2	13	23	31	34	37	33
				2	UF-1	1	12	21	31	39	41	36
			B	1	EAR	31	32	38	40	36	39	40
				2	EAR	38	36	39	39	39	41	44
	IUF1	6	A	1	V-51R	17	19	20	25	29	32	29
				2	V-51R	19	21	23	24	32	31	30
			B	1	EP100	20	21	21	29	33	36	39
				2	EP100	19	23	28	26	35	39	41

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
26	IUF2	7	A	1	UF-1	5	10	18	30	35	38	32
				2	UF-1	3	6	17	29	34	39	35
			B	1	EAR	27	28	33	35	35	40	43
				2	EAR	37	37	44	41	38	41	42
	IUF2	8	A	1	V-51R	-1	3	-2	3	18	20	17
				2	V-51R	17	17	20	22	27	28	23
			B	1	EP100	0	4	7	5	18	23	20
				2	EP100	19	15	22	23	28	34	34
27	SF1	1	A	1	UF-1	9	11	20	34	37	39	35
				2	UF-1	9	14	23	38	36	34	38
			B	1	EAR	28	25	24	26	39	34	34
				2	EAR	33	28	32	29	37	38	43
	SF1	2	A	1	EP100	35	35	41	37	38	38	41
				2	EP100	34	37	38	37	32	38	40
			B	1	V-51R	24	21	24	25	28	31	23
				2	V-51R	28	29	31	37	33	36	28
	SF2	3	A	1	UF-1	14	19	26	32	31	34	35
				2	UF-1	5	11	27	36	28	39	38
			B	1	EAR	22	26	25	29	36	40	42
				2	EAR	24	23	23	23	31	31	28
	SF2	4	A	1	EP100	36	39	42	42	34	42	44
				2	EP100	41	42	45	40	31	37	40
			B	1	V-51R	20	19	19	22	20	23	27
				2	V-51R	24	18	19	24	33	36	25
	IUF1	5	A	1	UF-1	7	11	22	38	36	34	34
				2	UF-1	8	8	22	35	32	35	33
			B	1	EAR	26	25	34	30	31	39	38
				2	EAR	37	38	40	52	35	42	38

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
27	IUF1	6	A	1	EP100	32	27	34	34	37	44	41
				2	EP100	29	34	35	33	32	40	43
			B	1	V-51R	25	24	24	31	32	31	32
				2	V-51R	21	21	15	22	32	31	27
	IUF2	7	A	1	UF-1	7	16	23	40	34	36	33
				2	UF-1	9	13	21	35	33	36	34
			B	1	EAR	44	41	46	42	37	37	38
				2	EAR	42	40	45	47	36	37	38
	IUF2	8	A	1	EP100	46	41	50	47	38	42	40
				2	EP100	41	41	47	43	38	41	42
			B	1	V-51R	32	29	38	40	39	38	35
				2	V-51R	26	20	23	27	37	32	28
28	SF1	1	A	1	V-51R	14	11	14	18	35	27	23
				2	V-51R	17	9	12	5	25	21	19
			B	1	EAR	27	24	28	28	40	40	40
				2	EAR	27	24	29	31	38	38	41
	SF1	2	A	1	UF-1	6	13	23	31	36	35	37
				2	UF-1	10	12	22	32	39	35	39
			B	1	EP100	4	6	6	12	29	21	19
				2	EP100	0	0	0	8	29	18	14
	SF2	3	A	1	V-51R	10	2	5	7	22	25	25
				2	V-51R	12	4	13	13	20	16	16
			B	1	EAR	23	20	26	29	35	40	40
				2	EAR	28	25	30	28	39	40	42
	SF2	4	A	1	UF-1	10	10	20	31	36	40	39
				2	UF-1	10	13	23	33	36	40	37
			B	1	EP100	-1	1	-5	3	27	22	16
				2	EP100	2	1	-7	11	25	24	19

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
28	IUF1	5	A	1	V-51R	12	7	14	14	17	18	15
				2	V-51R	11	3	4	6	15	16	14
			B	1	EAR	25	26	24	27	33	43	40
				2	EAR	26	29	32	31	39	41	44
	IUF1	6	A	1	UF-1	13	9	20	30	35	38	35
				2	UF-1	12	8	18	29	34	37	36
			B	1	EP100	25	24	26	26	40	43	35
				2	EP100	33	29	33	32	38	42	42
	IUF2	7	A	1	V-51R	3	2	6	16	19	23	18
				2	V-51R	12	9	16	21	27	18	21
			B	1	EAR	20	21	23	24	36	40	40
				2	EAR	23	21	24	26	39	39	40
	IUF2	8	A	1	UF-1	5	9	16	26	37	37	36
				2	UF-1	6	10	19	29	40	39	37
			B	1	EP100	36	34	38	34	50	49	46
				2	EP100	32	28	30	32	34	46	42
29	SF1	1	A	1	EP100	25	30	33	32	35	37	39
				2	EP100	20	21	19	22	30	38	40
			B	1	V-51R	11	12	7	16	25	25	21
				2	V-51R	11	14	9	17	24	27	21
	SF1	2	A	1	UF-1	1	12	15	27	30	34	32
				2	UF-1	3	11	19	27	32	37	35
			B	1	EAR	18	18	24	22	29	34	37
				2	EAR	3	13	13	21	27	33	31
	SF2	3	A	1	EP100	18	19	21	28	33	36	40
				2	EP100	6	8	11	23	30	32	32
			B	1	V-51R	16	15	13	20	23	26	21
				2	V-51R	15	11	11	19	22	29	31

Table 5. (continued)

Sub no.	Fit	Vis	Ses	Rep	Cond	Frequency (Hz)						
						125	250	500	1k	2k	4k	8k
29	SF2	4	A	1	UF-1	3	13	20	32	30	38	34
				2	UF-1	6	12	22	31	33	35	36
			B	1	EAR	35	37	36	36	37	35	41
				2	EAR	36	42	44	45	30	34	38
	IUF1	5	A	1	EP100	27	29	30	31	37	39	42
				2	EP100	27	30	30	26	37	36	38
			B	1	V-51R	27	25	21	26	32	32	35
				2	V-51R	25	27	22	24	29	35	37
	IUF1	6	A	1	UF-1	6	17	18	32	33	38	37
				2	UF-1	8	20	21	37	33	36	35
			B	1	EAR	38	39	40	36	32	36	41
				2	EAR	32	33	34	30	32	39	39
	IUF2	7	A	1	EP100	26	27	27	30	34	39	42
				2	EP100	25	25	28	30	32	37	40
			B	1	V-51R	18	17	13	17	25	32	37
				2	V-51R	17	25	19	25	30	35	38
	IUF2	8	A	1	UF-1	8	17	21	27	34	39	38
				2	UF-1	4	18	20	35	33	38	40
			B	1	EAR	29	39	37	34	36	42	41
				2	EAR	29	32	35	34	36	36	37

Table 6. Subject Head and Ear Measurements

Sub no.	Lft can sz	Rt can sz	Lft ear len (mm)	Rt ear len (mm)	Lft ear brdth (mm)	Rt ear brdth (mm)	Lft prtr (mm)	Rt prtr (mm)	Head hght (mm)	Btrgs brdth (mm)
1	S	S	55	58	34	33	26	22	134	122
4	S	S	60	61	30	35	18	17	139	132
5	S+	M	62	64	35	33	20	22	150	125
6	L+	L	65	63	36	39	23	22	146	138
7	M	M+	59	59	32	33	18	17	150	145
8	M+	M+	65	66	33	33	19	18	135	130
9	S	S	60	63	33	30	26	24	149	132
10	M	M	66	67	37	37	21	19	151	134
11	S+	M+	65	67	34	35	20	16	148	138
12	S	S+	58	57	29	30	22	27	136	121
13	M	S+	56	57	34	31	21	21	150	117
14	L+	L+	65	64	34	37	19	23	125	130
15	S+	S+	62	60	31	32	23	23	144	137
16	L	M+	63	63	32	31	24	20	138	132
17	M+	L	59	61	34	34	16	16	149	131
19	XS+	XS+	55	59	30	33	19	19	135	117
20	L+	XL	63	62	35	37	22	20	147	143
21	S	S	54	54	34	36	16	16	142	129
22	M	M	64	63	32	33	25	24	154	128
23	M+	M+	71	69	33	34	18	19	153	143
24	S+	S+	56	55	35	31	22	22	152	122
25	L	L	63	63	32	34	18	19	144	122
26	S+	S	67	67	29	31	26	24	142	125
27	L	L	64	64	33	33	17	17	159	132
28	XL	XL	62	60	38	38	25	20	154	132
29	S+	M	60	61	31	31	25	24	146	125

Table 7. Means and Standard Deviations of Attenuation

HPD	Fit	Atten	Frequency (Hz)						
			125	250	500	1k	2k	4k	8k
V-51R	SF1	Mean	10.6	9.9	11.3	14.7	22.3	24.7	20.8
		SD(48)	9.7	9.1	9.6	10.3	10.7	7.9	7.8
		SD(24)	9.9	10.3	9.9	9.0	8.0	6.6	10.2
	SF2	Mean	8.9	8.7	9.7	13.0	19.9	23.4	19.3
		SD(48)	10.0	9.3	10.0	11.0	10.4	8.5	6.5
		SD(24)	9.7	8.6	9.0	8.5	8.0	6.9	9.7
	IUF1	Mean	15.2	15.1	16.0	20.5	26.2	28.0	24.7
		SD(48)	9.4	9.1	8.6	8.7	8.1	6.6	7.0
		SD(24)	7.5	7.3	6.8	5.9	6.0	5.6	10.2
	IUF2	Mean	13.5	13.2	14.9	20.3	26.4	27.8	24.0
		SD(48)	9.2	8.4	8.7	7.9	7.6	6.5	6.8
		SD(24)	8.3	7.9	8.2	5.7	6.8	6.5	10.6
EP100	SF1	Mean	13.0	14.3	15.0	16.4	23.6	29.0	27.9
		SD(48)	12.1	12.0	13.3	12.0	12.3	11.7	13.0
		SD(24)	11.2	10.7	12.5	11.2	9.1	10.2	13.9
	SF2	Mean	12.8	13.1	14.6	18.3	23.7	28.9	27.8
		SD(48)	11.5	11.2	13.1	12.1	11.9	11.8	12.7
		SD(24)	12.0	11.9	13.5	12.1	10.6	11.5	15.0
	IUF1	Mean	20.3	20.3	22.8	25.0	31.1	37.2	36.7
		SD(48)	9.4	9.8	9.6	8.0	8.8	7.5	8.9
		SD(24)	11.3	11.7	12.8	12.1	11.6	11.8	15.0
	IUF2	Mean	21.1	21.3	24.0	25.1	30.5	37.4	37.1
		SD(48)	11.2	9.4	10.3	9.1	7.6	6.8	8.0
		SD(24)	11.5	11.2	12.1	10.2	10.0	10.7	14.0
EAR	SF1	Mean	17.9	19.0	21.0	24.7	29.9	35.6	34.6
		SD(48)	8.7	7.9	8.6	7.6	5.7	5.6	6.3
		SD(24)	6.6	6.2	6.5	5.4	4.9	5.7	8.2
	SF2	Mean	22.0	22.5	25.3	27.7	32.3	37.3	38.0

Table 7. (continued)

HPD	Fit	Atten	Frequency (Hz)						
			125	250	500	1k	2k	4k	8k
EAR	SF2	SD(48)	8.0	8.2	9.1	8.2	4.9	5.8	4.7
		SD(24)	6.8	6.7	7.1	6.2	4.8	3.8	6.1
	IUF1	Mean	26.9	26.8	30.3	31.3	33.4	39.1	39.3
		SD(48)	7.6	8.3	8.3	7.0	3.9	3.7	3.8
		SD(24)	7.0	8.3	8.1	7.2	5.1	3.8	6.5
	IUF2	Mean	28.0	29.4	32.2	32.8	34.0	39.3	39.6
		SD(48)	7.6	8.0	8.3	6.8	4.1	3.6	4.2
		SD(24)	8.1	8.7	8.7	7.5	5.2	4.7	5.8
UF-1	SF1	Mean	7.0	13.3	21.5	30.4	33.6	34.9	34.9
		SD(48)	4.2	2.9	3.6	4.2	4.6	3.4	3.6
		SD(24)	3.8	3.0	3.0	3.8	3.1	3.4	3.8
	SF2	Mean	7.1	13.5	20.6	30.0	33.5	34.3	34.5
		SD(48)	3.3	3.2	3.4	3.9	5.0	3.4	3.6
		SD(24)	2.9	2.8	2.9	4.1	3.9	3.9	5.3
	IUF1	Mean	7.4	13.5	20.7	30.9	34.2	35.5	35.5
		SD(48)	4.0	2.6	3.1	4.2	3.0	2.7	2.5
		SD(24)	4.1	2.9	2.2	4.0	2.8	3.7	4.1
	IUF2	Mean	6.9	13.5	20.4	30.5	34.0	35.9	35.4
		SD(48)	3.1	3.4	3.6	4.2	3.0	3.4	4.3
		SD(24)	4.1	3.6	3.5	4.3	3.1	3.4	4.3

Table 8. NRR Values

HPD	Fit	NRR		
		-2sd	-1sd	-0sd
V-51R	SF1	-4.8	5.0	14.8
	SF2	-7.3	3.0	13.1
	IUF1	2.7	11.2	19.6
	IUF2	2.3	10.7	18.9
EP100	SF1	-7.3	5.2	17.7
	SF2	-6.6	5.8	18.2
	IUF1	7.6	16.7	25.6
	IUF2	7.3	16.8	26.0
EAR	SF1	8.6	16.6	24.4
	SF2	11.5	19.8	27.8
	IUF1	17.2	24.5	31.2
	IUF2	19.2	26.2	32.5
UF-1	SF1	15.4	19.1	22.7
	SF2	15.7	19.2	22.6
	IUF1	16.2	19.5	22.8
	IUF2	15.8	19.2	22.5

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